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Research Report

User experience and personal innovativeness: An empirical study on the Enterprise Resource Planning systems

Yujong Hwang *

School of Accountancy and MIS, Driehaus College of Business, DePaul University, 1 E. Jackson Blvd., Chicago, IL 60604, United States
College of International Studies, Kyung Hee University, 1732 Deogyoeng-daero, Giheung-gu, Yongin-si, Gyeonggi-do 446-701, Republic of Korea

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ABSTRACT

Although user experience and personal innovativeness are two important factors in new technology adoption, there has been no prior study to test these factors with the Enterprise Resource Planning (ERP) adoption. This paper investigates moderating roles of user experience on the relationship between the personal innovativeness and the ERP adoption motivations. This issue is important because if the user has more experience with the systems then the power of influence of personal innovativeness on ERP adoption motivation would be different. Thus, this paper tests these important insights of ERP systems adoption with the two different field samples with high (more than three years) and low (less than three years) user experience, based on the innovation diffusion theory, self determination theory, and different types of motivations such as intrinsic and extrinsic motivations. The findings, based on the PLS analysis of the model using 107 ERP end users, show that there are clear moderating effects of user experience—such as impacts of personal innovativeness on ERP systems adoption motivations are higher in case of low user experience samples, as expected. Academic and practical implications are discussed in the paper based on these empirical findings.

1. Introduction

Enterprise Resource Planning (ERP) systems are gaining interest from both practitioners and researchers because these systems are essential to organizational and individual user's productivity (Grant, Hwang, & Tu, 2013; Hwang, 2012a; Hwang & Grant, 2011). ERP systems are usually large systems involving different types of stakeholders as end users in the organization (Akkermans & van Helden, 2002; Burns, Jung, & Hoffman, 2009). The importance of ERP systems adoption by the end users is consistently emphasized for the successful implementation of enterprise systems (Davison, 2002). Furthermore, given the implementation environment of ERP systems involves different technical environment such as Europe (Hanseth, Ciborra, & Braa, 2001) and Asia (Liang, Xue, Boulton, & Byrd, 2004; Martinsons, 2004), the complexity inherent in the adoption of ERP systems becomes an important issue in that users will have different motivations with different technical backgrounds and experiences. Researchers also investigate ERP systems management and implementation issues which compares different end users based on different user characteristics. For example, many studies have looked into IT adoption (including ERP adoption) in various technical backgrounds and individual characteristics (e.g., Martinsons, 2004; Saeed, Hwang, & Yi, 2003). These issues are important because currently ERP systems involve end users with different individual backgrounds.

Self determination theory (Deci & Ryan, 1985; Korpelainen, Vartiainen, & Kira, 2010) showed that all individuals have natural, innate, and constructive tendencies to develop an ever more elaborate and unified sense of self. It focuses on how individuals develop a coherent sense of self through regulation of their behavioral actions that may be self-determined, controlled, or motivated. Self determination theory emphasizes an individual's intrinsic motivation (perceived enjoyment) as a main behavioral mechanism in general social behavior.

Rogers' (1983) innovation diffusion theory shows that diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Moore and Benbasat (1991) extended the set of perceptions proposed by Rogers (1983) to include seven perceived characteristics of an innovation as predictors of IT adoption behavior. Agarwal and Prasad (1998) also provided Personal Innovativeness in IT (PIIT), the willingness of an individual to try out any new information technology, as a trait and a relatively stable predictor of individuals

* Address: School of Accountancy and MIS, Driehaus College of Business, DePaul University, 1 E. Jackson Blvd., Chicago, IL 60604, United States. Tel.: +1 (312) 362 5487; fax: +1 (312) 362 6208.
E-mail address: yujongh@yahoo.com

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that is invariant across situational considerations. Lewis, Agarwal, and Sambamurthy (2003) also showed that PIIT has effects on intrinsic and extrinsic motivations about new IT such as perceived ease of use (PEOU), perceived usefulness (PU).

Specifically, this paper investigates the influence of PIIT on intrinsic and extrinsic motivations of ERP systems adoption with the different user experience groups (more than three years and less than three years of ERP user experiences). Liang et al. (2004) also argued, based on various ERP systems implementation cases, that ERP systems strategies must consider different user experiences, backgrounds, and localized strategies. Thus, the specific research question in this study is as follows: "Is there any difference of the impacts of PIIT on ERP systems adoption motivations, such as intrinsic and extrinsic motivations, in the different user experience groups?"

We have the following research objectives in this study. First, we investigate moderating roles of user experience on the relationship between the personal innovativeness and the technology adoption motivations. Given that personal innovativeness is very important construct for technology adoption, further understanding this construct would provide academic contribution to IS community. Second, we integrate the self determination theory and the innovation diffusion theory in view of individual-level of analysis of the end users' ERP adoption. We test these models based on the field survey data of ERP system users. ERP systems are one of the most important and complex systems for the current business organizations, and understanding the complex phenomena on ERP system users would also provide practical contribution.

2. Research model and hypotheses

Agarwal and Prasad (1998) also provided Personal Innovativeness in IT (PIIT), the willingness of an individual to try out any new information technology, as a trait and a relatively stable predictor of individuals that is invariant across situational considerations. They provided valid measures of PIIT and showed that PIIT has a moderating effect between perceptions about new IT (relative advantage, PEOU and compatibility) and intention to use new IT. While innovativeness has received attention as a determinant of innovation adoption behavior, marketing research noted that it is important to conceptually and operationally draw a distinction between global innovativeness and domain-specific innovativeness (Agarwal & Prasad, 1998; Flynn & Goldsmith, 1993). Lewis et al. (2003) explained that domain-specific PIIT is an important source of "individual influence" on IT adoption, which is different from "social influences."

Based on the self determination theory (Deci & Ryan, 1985), Malhotra and Galleta (2005) argued that tacit perspective of knowledge management such as ERP implementation should be managed and controlled mainly by self control or intrinsic motivation, rather than by formal controls based on self determination theory. The role of intrinsic motivation, such as perceived enjoyment, for the adoption of enterprise systems is recently gaining significant interest from IS researchers based on the self determination theory. Malhotra and Galleta (2005) recently argued that a system user's intrinsic motivational development was omitted in the previous research model, such as the technology acceptance model, which investigated IS adoption. A better understanding of the nature of systems users' intrinsic motivational factors promises to contribute to the design of more effective enterprise systems and the company's more successful organizational IS implementation and management. In ERP systems implementation, project managers can use intrinsic motivation or the values of end users to contribute to systems adoption. An intrinsic dimension of IS use is related to self control in the organizational setting and tacit knowledge perspective (Malhotra & Galleta, 2005). Sia, Tang, Soh, and Boh (2002) explained enterprise systems implementation with the empowerment concept, which is related to self control. They argued that enterprise implementation gives users more job discretion than their functional needs, and there is a reduction in procedural formality within the modular design. This intrinsic dimension of self control in ERP systems implementation should be investigated further.

Based on the innovation diffusion theory and self determination theory, we propose the research model as depicted in Fig. 1. In this study we expect that PIIT influences intrinsic motivation (such as PEOU and perceived enjoyment) and extrinsic motivation (such as PU) in ERP systems adoption. Further, we included in the model the moderating effects of user experience (more than three years and less than three years of ERP user experiences).

Limayem, Khalifa, and Frini (2000) argued that using IS is an innovative behavior that is more likely to be adopted by innovators than non-innovators. Thus, it is important to include this construct in order to account for individual differences. Limayem et al. (2000) included personal innovativeness and social norms in the model of online consumer behavior, and found positive relationships with purchase intention ($p < .001$). In their model, personal innovativeness is a global innovativeness construct based on

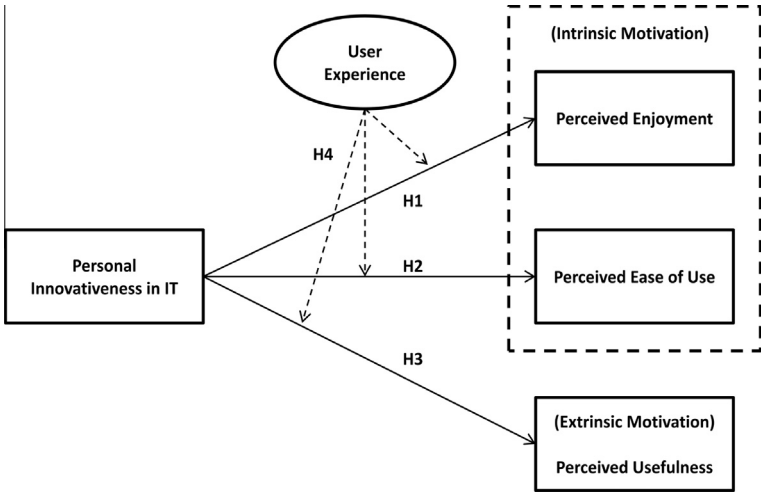

Fig. 1. Proposed research model.